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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,939	01/14/2004	Jin-Ho Park	21C-0108	3289

23413 7590 06/03/2009  
CANTOR COLBURN, LLP  
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Hartford, CT 06103

EXAMINER
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BODDIE, WILLIAM

ART UNIT	PAPER NUMBER
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2629

NOTIFICATION DATE	DELIVERY MODE
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06/03/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptopatentmail@cantorcolburn.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/756,939	<b>Applicant(s)</b> PARK, JIN-HO	
	<b>Examiner</b> WILLIAM L. BODDIE	<b>Art Unit</b> 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 14-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 14-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. In an amendment dated, March 30<sup>th</sup>, 2009, the Applicant amended claims 1, 7, 14 and cancelled claims 12-13. Currently claims 1-11, 14-17 are pending.

#### ***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 30<sup>th</sup>, 2009 has been entered.

#### ***Response to Arguments***

3. Applicant's arguments with respect to claims 1-11, 14-17 have been fully considered but are not persuasive.

4. On pages 7-8 of the Remarks, the Applicant appears to argue that Kawaguchi does not disclose that "the output instruction signal is delayed depending on a capacitive load and a resistive load formed by the output instruction signal line and the common electrode."

5. The Examiner must respectfully disagree. While true Kawaguchi does not disclose a resistive load delaying the output instruction signal formed between the signal line and the common electrode, Kawaguchi's signal line will be affected by the resistive load that is inherently present in all signal lines. This inherency was furthermore described by the Applicant in the current specification (page 3, lines 2-5).

As for the capacitive load, Nakamura discloses, specifically placing the common electrode over several signal lines. While the signal lines placed under the common electrode are not specifically output instruction signal lines, they are data signals and power signals which are timing dependent. This is not seen as remarkably different from the signal line types present on the glass substrate of Kawaguchi. Thus the Examiner maintains that it would have been obvious to one of ordinary skill in the art to place the common electrode over the output instruction signal line as taught by Nakamura for the benefit of a smaller frame size. Furthermore by placing the common electrode substrate over the output instruction signal line a capacitive load will be generated which will further delay the output instruction signal.

6. The Applicant further appears to argue that Kawaguchi does not disclose that the data driver outputs a delayed image data signal.

7. The Examiner must again respectfully disagree. The data driver of Kawaguchi, is merely waiting to receive the output instruction signal line to signal it is time to output the image data signal. Therefore, if the output instruction signal line is delayed then the outputting of the image data signal will also be delayed.

8. The rejections of the claims have been updated to address the current amendments but have otherwise been maintained.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-5, 7-9, 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi et al. (US 5,592,199) in view of Nakamura et al. (US 7,136,058).

**With respect to claim 1**, Kawaguchi discloses, an LCD apparatus comprising:  
an LCD panel (221 in fig. 30) displaying images (col. 15, lines 27-42) and  
including:

- a first substrate (228 in fig. 30);
- a second substrate facing the first substrate (227 in fig. 30), a plurality of pixels being provided on the second substrate (fig. 1; col. 18, lines 39-45);
- gate lines (x-axis in fig. 30, for example) disposed on the second substrate and opposing the first substrate (fig. 30), the gate lines receiving a gate driving signal;
- data lines for supplying image data signals to the pixels (3 in fig. 1, for example; col. 31, lines 13-16); and
- an output instruction signal line (231 in figs. 30-32) disposed on the second substrate (figs. 1, 33) transmitting an output instruction signal;
- a data driver (6 y-axis ICs; 229 in fig. 30) disposed on a data tape carrier package (TCP) (230 in figs. 30-32);
- a gate driver (4 x-axis ICs in fig. 30) outputting a gate driving signal to the LCD panel; and
- a timing controller (8 in fig. 1; col. 19, lines 15-18; 232 in fig. 30; col. 28, lines 6-14) providing a first control signal (x-axis 231 in fig. 30) to the gate driver so as to

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control an output of the gate driving signal and providing the output instruction signal (y-axis 231 in fig. 30) to the data driver via the output instruction signal line (col. 25, lines 3-12) to delay the output instruction signal depending on a resistive load formed by the output instruction signal line (the output instruction signal line will inherently consist of a resistive load that will delay the output instruction signal),

wherein the output instruction signal line is disposed between the data TCP and the gate lines (gate lines are seen as the parallel lines that are output from 4 x-axis ICs, in fig. 30, into the panel, while the data TCP is seen as 230 in fig. 30; should be clear from fig. 30 that the output instruction signal line is disposed between the TCP and the gate lines), and

wherein the data driver outputs a delayed image data signal to the LCD panel as the output instructions signal is delayed (the resistive load attributed to the metallic signal line which provides the output instruction signal will inherently cause delay, each data driver in fig. 30 will thus be at least slightly delayed in outputting the data signal).

Kawaguchi does not expressly disclose a common electrode disposed on the first substrate; or that the output instruction signal line opposes the common electrode.

Nakamura discloses, an LCD apparatus comprising:

a first substrate, and a second substrate facing the first substrate (col. 4, lines 10-19);

a common electrode disposed on the first substrate (col. 4, lines 17-19);

gate lines disposed on the second substrate and opposing the common electrode (col. 4, lines 10-19); and

signal lines (P1 in fig. 14; and C4, C5 wiring in fig. 15) disposed on the second substrate and opposing the common electrode such that the signal lines have a capacitive load (fig. 14-15; the signal lines will inherently have a capacitive load due to being overlapped with the common electrode in a manner identical to the Applicant's invention).

Nakamura and Kawaguchi are analogous art because they are both from the same field of endeavor, namely LCD driver circuitry.

At the time of the invention it would have been obvious to one of ordinary skill in the art to arrange the output instruction signal lines of Kawaguchi so as to overlap the common electrode as taught by Nakamura.

The motivation for doing so would have been to reduce the frame size of the LCD, resulting in a more portable display (Nakamura; col. 15, lines 42-50).

**With respect to claim 2**, Kawaguchi and Nakamura disclose, the LCD apparatus of claim 1 (see above).

Kawaguchi further discloses, wherein the output instruction signal line is formed on an area adjacent to the data driver (clear from fig. 30).

**With respect to claim 3**, Kawaguchi and Nakamura disclose, the LCD apparatus of claim 2 (see above).

Kawaguchi further discloses, comprising a plurality of signal transmission members (246, 248 in fig. 32; for example) electrically connecting the data driver with the LCD panel,

wherein the output instruction signal line receives the output instruction signal from timing controller via one of the signal transmission members (note the connection of 231 with 242 and 240 in fig. 32).

**With respect to claim 4**, Kawaguchi and Nakamura disclose, the LCD apparatus of claim 3 (see above).

Kawaguchi further discloses, wherein the LCD panel comprises:

the gate lines (note the outputting gate lines from the y-axis ICs in fig. 30) receiving the gate driving signal via the gate driver, the gate lines disposed on the LCD panel, extended in a first direction and arranged in a second direction substantially perpendicular to the first direction (fig. 30); and

a plurality of data lines (x-axis ICs in fig. 30) receiving the image data via the data driver, the data lines disposed on the LCD panel, extended in the second direction and arranged in the first direction (col. 37, lines 29-42, discusses the orientation and design of a matrix panel using the gate and data lines oriented in the way currently claimed).

**With respect to claim 5**, Kawaguchi and Nakamura disclose, the LCD apparatus of claim 4 (see above).

Kawaguchi further discloses, wherein the output instruction signal line is extended in the first direction and is substantially parallel to the gate lines (seems clear from figs. 30-32).

**With respect to claim 7**, Kawaguchi discloses, an LCD apparatus comprising:  
an LCD panel (221 in fig. 30) displaying images (col. 15, lines 27-42) and  
including:



a first substrate (228 in fig. 30);

a second substrate facing the first substrate (227 in fig. 30), a plurality of pixels being provided on the second substrate (fig. 1; col. 18, lines 39-45);

gate lines (x-axis in fig. 30, for example) disposed on the second substrate and opposing the first substrate (fig. 30), the gate lines receiving a gate driving signal;

data lines for supplying image data signals to the pixels (3 in fig. 1, for example; col. 31, lines 13-16); and

an output instruction signal line (231 in figs. 30-32) disposed on the second substrate (figs. 1, 33) transmitting an output instruction signal;

a data driver (6 y-axis ICs; 229 in fig. 30) disposed on a data tape carrier package (TCP) (230 in figs. 30-32);

a gate driver (4 x-axis ICs in fig. 30) outputting a gate driving signal to the LCD panel; and

a timing controller (8 in fig. 1; col. 19, lines 15-18; 232 in fig. 30; col. 28, lines 6-14) providing a first control signal (x-axis 231 in fig. 30) to the gate driver so as to control an output timing of the gate driving signal and providing the output instruction signal (y-axis 231 in fig. 30) to the data driver data via the output instruction signal line (col. 25, lines 3-12) to delay the output instruction signal depending on a resistive load formed by the output instruction signal line (the output instruction signal line will inherently consist of a resistive load that will delay the output instruction signal); and

a plurality of signal transmission members (246, 248 in fig. 32; for example) electrically connecting the data driver with the LCD panel;

wherein the output instruction signal line provides the output instruction signal to the data driver via one of the signal transmission members (note the connection of 231 with 242 and 240 in fig. 32); and

wherein the output instruction signal line is disposed between the data TCP and the gate lines (gate lines are seen as the parallel lines that are output from 4 x-axis ICs, in fig. 30, into the panel, while the data TCP is seen as 230 in fig. 30; should be clear from fig. 30 that the output instruction signal line is disposed between the TCP and the gate lines); and

wherein the data driver outputs a delayed image data signal to the LCD panel as the output instructions signal is delayed (the resistive load attributed to the metallic signal line which provides the output instruction signal will inherently cause delay, each data driver in fig. 30 will thus be at least slightly delayed in outputting the data signal).

Kawaguchi does not expressly disclose a common electrode disposed on the first substrate; or that the output instruction signal line opposes the common electrode.

Nakamura discloses an LCD apparatus comprising:

a first substrate, and a second substrate facing the first substrate (col. 4, lines 10-19);

a common electrode disposed on the first substrate (col. 4, lines 17-19);

gate lines disposed on the second substrate and opposing the common electrode (col. 4, lines 10-19); and

signal lines (P1 in fig. 14; and C4, C5 wiring in fig. 15) disposed on the second substrate and opposing the common electrode such that the signal lines have a

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capacitive load (fig. 14-15; the signal lines will inherently have a capacitive load due to being overlapped with the common electrode in a manner identical to the Applicant's invention).

Nakamura and Kawaguchi are analogous art because they are both from the same field of endeavor namely LCD driver circuitry.

At the time of the invention it would have been obvious to one of ordinary skill in the art to arrange the output instruction signal lines of Kawaguchi so as to overlap the common electrode as taught by Nakamura.

The motivation for doing so would have been to reduce the frame size of the LCD, resulting in a more portable display (Nakamura; col. 15, lines 42-50).

**With respect to claim 8**, Kawaguchi and Nakamura disclose, the LCD apparatus of claim 7 (see above).

Kawaguchi further discloses, wherein the LCD panel comprises:

the gate lines (note the outputting gate lines from the ICs in fig. 30) extended in a first direction and arranged in a second direction substantially perpendicular to the first direction; and

a plurality of data lines (x-axis lines in fig. 30) extended in the second direction and arranged in the first direction (col. 37, lines 29-42, discusses the orientation and design of a matrix panel using the gate and data lines oriented in the way currently claimed).

**With respect to claim 9**, Kawaguchi and Nakamura disclose, the LCD apparatus of claim 8 (see above).

Kawaguchi further discloses, wherein the output instruction line is extended in the first direction (clear from fig. 30).

**With respect to claim 11**, Kawaguchi, Nakamura and Kubota disclose, the LCD apparatus of claim 7 (see above).

Kawaguchi further discloses, wherein the signal line is formed on the LCD panel and adjacent to the data driver (clear from fig. 30).

**With respect to claim 14**, Kawaguchi and Nakamura disclose, the LCD apparatus of claim 1 (see above).

Kawaguchi, when combined with Kubota and Nakamura, further discloses, comprising a plurality of signal transmission members (Kawaguchi; 246, 248 in fig. 32; for example) electrically connecting the data driver with the LCD panel,

wherein the output instruction signal line receives the output instruction signal from timing controller via one of the signal transmission members (Kawaguchi; note the connection of 231 with 242 and 240 in fig. 32).

**With respect to claim 15**, Kawaguchi and Nakamura disclose the LCD apparatus of claim 1 (see above).

Kawaguchi, when combined with Nakamura and Kubota, further discloses wherein capacitive and resistive loads of the gate lines and the output instruction signal line are substantially equal to each other (Kawaguchi discloses that the output instruction line and the gate lines are formed on the same substrate. This is seen as sufficient to generate capacitive and resistive loads that are substantially equal to one

another. As discussed by the Applicants on page 13, lines 16-23, all that is attributed to the two lines having equal loads is that they are formed on the same substrate).

**With respect to claim 16**, Kawaguchi and Nakamura disclose the LCD apparatus of claim 1 (see above).

Kawaguchi, when combined with Nakamura, further discloses wherein a delay of providing the output instruction signal to the data driver is substantially equal to the delay of the gate driving signal (Kawaguchi discloses that the output instruction line and the gate lines are formed on the same substrate. This is seen as sufficient to delay the two signals an equal amount. As discussed by the Applicants on page 13, lines 16-23, all that is attributed to the two lines having equal delays is that they are formed on the same substrate).

**With respect to claim 17**, Kawaguchi and Nakamura disclose the LCD apparatus of claim 1 (see above).

Kawaguchi further discloses, wherein a portion of the output signal line is disposed on the data driver (fig. 30's mapping of the output signal line is very similar to that shown in Applicant's own figure 4; also note fig. 32 of Kawaguchi which shows the output signal line connecting and extending onto the flexible circuit board (236,242,255) and eventually the data driver).

11. Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi et al. (US 5,592,199) in view of Nakamura et al. (US 7,136,058) and further in view of Kubota et al. (US 6,791,526).

**With respect to claim 6**, Kawaguchi and Nakamura disclose, the LCD apparatus of claim 4 (see above).

Kawaguchi further discloses, wherein the LCD panel comprises a plurality of pixel areas defined by the gate and data lines (col. 37, lines 29-42).

Kawaguchi is silent on the exact timing of the signals and their application to pixel areas.

The conventional timing of LCD panel signals is disclosed by Kubota. Kubota discloses, that the gate driving signal is provided to a corresponding pixel area at a same time as that of the image data provided to the corresponding pixel area (col. 1, lines 62-67).

Kubota, Nakamura and Kawaguchi are analogous art because they are both from the same field of endeavor namely control circuitry design for LCD panels.

At the time of the invention it would have been obvious to one of ordinary skill in the art to time the gate and data signals of Kawaguchi in the conventional manner disclosed by Kubota.

The motivation for doing so would have been so that each pixel receives the correct data waveform at the appropriate time, as well as for a decreased timing complexity.

**With respect to claim 10**, Kawaguchi and Nakamura disclose, the LCD apparatus of claim 9 (see above).

Kawaguchi further discloses, wherein the LCD panel comprises a plurality of pixel areas defined by the gate and data lines (col. 37, lines 29-42).

Kawaguchi is silent on the exact timing of the signals and their application to pixel areas.

The conventional timing of LCD panel signals is disclosed by Kubota. Kubota discloses, that the gate driving signal and the image data are substantially simultaneously provided to a corresponding pixel area (col. 1, lines 62-67).

Kubota, Nakamura and Kawaguchi are analogous art because they are both from the same field of endeavor namely control circuitry design for LCD panels.

At the time of the invention it would have been obvious to one of ordinary skill in the art to time the gate and data signals of Kawaguchi in the conventional manner disclosed by Kubota.

The motivation for doing so would have been so that each pixel receives the correct data waveform at the appropriate time, as well as for a decreased timing complexity.

### ***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM L. BODDIE whose telephone number is (571)272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William L Boddie/  
Examiner, Art Unit 2629  
6/1/2009

/Sumati Lefkowitz/  
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